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or keyed keys, the joint hoops fall down, so that the wheel or wheels may be taken off and oiled, or when done with the internal flanch hoops, by taking out the bolts which keep the hoops on the naves, may be taken off.

In witness whereof, &c.

Observations by the Patentee.

The patentee informs the public, that his invention has been tried with much success on the carriage of a stage-coach in the following manner. The arm of the axletree cut three parts through, and the coach loaded, went several miles in this situation without linch pins or nuts; after which the arm of the axletree was broken off, and the carriage went several miles farther (loaded) with the axletree out with the same facility as before. These preservers can be fixed to any carriage, notwithstanding the same may have been many years in use, and not be discerned without minutely examining the carriage, and but little additional weight. The joint hoops, which lay stationary in the groove flanch hoops, are made large enough to allow of the wear of axletrees and boxes, and never touch except when an accident occurs, which cause no additional draught to the horses; they will rather tend to lessen the draught, as where the joint hoops are fixed the axletrees may be made much smaller than they in general are, as there is no danger if the axletree should break. By this invention being adopted, many serious accidents may be prevented, which in the present mode so frequently occur from the wheels of carriages getting off, or the axletrees breaking. This plan will enable a carriage to go any distance after the linch pin breaks or nuts getting off; or if the axletree breaks, the carriage will proceed on its journey with the same

facility, without causing any delay, or any possible danger.

Specification of the patent granted to Peter Joseph Brown, of Henrietta-street, Covent Garden, in the county of Middlesex, Gentleman; for an improved construction of Buoys for ships or vessels, and for mooring chains, or similar purposes.

Dated December 26, 1810.

TO all to whom these presents shall come, &c. Now know ye, that in compliance with the said proviso, I the said Peter Joseph Brown do declare that my said invention is particularly described and ascertained in manner following; that is to say: Instead of constructing any buoys of wood or of iron, which has already been done, I construct them of copper or of brass, or of any other metal, mixture of metals, or metals coated with metals, possessing sufficient tenacity and strength, but I prefer copper: the said buoys are in fact hollow water-tight vessels, of any form that may be required, but the nearer they approach to the form of a sphere, the more buoyant are they in proportion to their weight; and they are made either by facing the metal or mixture of metals employed, and casting them in moulds, or of metal plates worked into form, and joined together, in a workmanlike manner, by rivets, screws, solder, or any means adapted to the end intended. The said buoys may from time to time receive a coating of pitch, tar, varnish, or paint, to defend them the longer against the action of the water, but this is not indispensably requisite, as they will last for a long time without any coating whatever. The said metallic buoys being very sonorous, are intended also to be employed as an occasional substitute for ships bells; for this purpose it is only necessary

to strike the buoy suspended with a wooden mallet.

I also propose, where it may be required, to attach a little mast to coast or other buoys, which may carry a vane, with the soundings, bearings, and distances of the neighbouring buoys, or any other notice, and particular buoys, where and when this may be desirable, may carry a lamp or lamps attached to their masts, or they may be particularly adapted and constructed in the upper part of the buoy; for that purpose, the buoys before described may be employed for every purpose for which buoys have hitherto been used, but the following improvements are of more general application. Great inconvenience has often been experienced by mariners, from the circumstance of the buoy-rope getting foul of the anchor at low water; and it has hitherto been found impracticable to place buoys with chains in water of more than a certain depth, owing to the weight of the chains when of length sufficient to reach to great depths. Both of these evils are remedied by the application of my invention now to be described; that is to say, to prevent a ship's buoy-rope from getting foul of the anchor, I attach to the buoy rope, any where near its middle, another buoy, which I call the secondary buoy or carrier, and which, by its buoyant effort to reach the surface, keeps the lower part of the buoy rope constantly upon the stretch. In like manner, to float a heavy chain in great depth, I attach to different parts of the chain below the main, a buoy secondary or carrier, of sufficient capacity to maintain respectively that portion of chain which is between carrier and carrier. These carriers may in some cases be made of wood, like the buoys in common use, or of any other buoyant substance, but I pre-

fer them to be made of metal. I also obviate the difficulty of placing long chains in deep water, by making the chain itself buoyant, that is, at certain distances in the chain I interpose, as substituted for links, carrier buoys, furnished with rings at both ends, to facilitate their junction with the different portions of the chain, and which portions of chain may be composed of long rods, with eyes or rings at each end; or I substitute for the chains in use, chains composed of portions of hollow cylinders or prisms, of convenient length, attached to each other in succession by rings, chains, links, or any other suitable contrivance, taking care that the buoyant capacity of those portions of cylinders or prisms be at least sufficient to maintain themselves, and the interposed rings or other contrivance made use of to join them. These buoyant chains present also another advantage, which is of some importance: they may be made of such a diameter as to prevent the possibility of their getting entangled between the rudder and stern parts of ships, that happen to come in contact with them. And, lastly, I propose some time to construct my buoys of leather, either with or without internal supports, made of metal or of wood, or both combined, provided the same shall not have been done before.

In witness whereof, &c.

Improvement in the Aquatinta Process, by which pen, pencil, and chalk drawings can be imitated; by Mr. John Hassel, of Clement's-ann.

Perceiving the various methods of imitating drawings and sketches in the graphic art fall short of an accurate imitation of the black-lead pencil, I determined on an attempt,